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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,183	08/02/2006	Michael Mahler	3745	6721

7590 07/19/2010

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ART UNIT	PAPER NUMBER
3662	

MAIL DATE	DELIVERY MODE
07/19/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/588,183
Filing Date: August 02, 2006
Appellant(s): MAHLER ET AL.

Michael J. Striker
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 5/10/2010 appealing from the Office action mailed 12/2/2009.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application: 1-3, 5-12.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the

subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

WITHDRAWN REJECTIONS

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner:

The rejection of claims 3, 9, 10, and 11 as unpatentable over Arndt (US 6,501,414) in view of Nix (US 3,815,016).

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

6,501,414	Arndt	12-2002
5,904,201	Stump	5-1999
6,492,933	McEwan	12-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, 5- 8, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arndt (US 6,501,414).

Regarding claim 1, Arndt teaches a method for determining the thickness of material by penetrating the material, in particular a method for measuring the thickness of walls, ceilings and floors (9:14-20, esp. 19-20), with which a measurement signal (14, Fig. 1) in the gigahertz frequency range (9:53-57) emitted using a high-frequency transmitter (32, Fig. 1) penetrates the material (16, Fig. 2) to be investigated at least once and is detected by a high-frequency receiver (44, Fig. 1), wherein the thickness of the material is measured via at least two transit-time measurements ("time delay" 10:47-53) of the measurement signal performed for various positions (10:1-42, esp. "plurality of positions" 10:2) of the high-frequency transmitter and the high-frequency receiver operated in a same device (12, Fig. 1).

Arndt teaches that the device may be moved by manual means (10:38-39), and that this may be particularly desirable in some locations (10:41-42), but does not explicitly teach that the device is hand-held. However, hand-held devices of the type taught by Arndt are known in the art; for example, Arndt describes one such prior art device at 3:38-48 (see especially 3:47-48). It would have been obvious to modify Arndt by implementing the device as a hand-held device in order to facilitate the manual movement taught by Arndt and because it could be done with no new or unexpected results.

Regarding claims 2 and 12, Arndt teaches that the transmitter and receiver are operated on a first surface (38, Fig. 1) of the material, and that the signal from the transmitter is reflected back to the receiver (9:35-38), which reflection necessarily implies a "reflector means". In the example of Fig. 1, object 18 acts as a reflector means.

Regarding claim 5, Arndt teaches that the measuring device is moved over a surface of the material to record the at least two transit-time measurements (10:1-42).

Regarding claim 6, Arndt teaches that the displacement path of the device is detected (10:11-13, 10:62-66).

Regarding claim 7, Arndt teaches that the measurement signal is generated in the gigahertz frequency range (9:53-57), but does not teach a pulsed-radar method. However, pulsed-radar methods are well known in ground penetrating applications of the type taught by Arndt. Further, Arndt teaches stepping the measurement signal over a plurality of frequencies (ab. 5-6), and it is known to implement such signals using pulses. It would have been obvious to modify Arndt by implementing the measurement signal using pulses because it could be done with no new or unexpected results.

Regarding claim 8, Arndt teaches that measurement frequencies fall in interval of 1500 MHz - 3500 MHz (9:56-57).

3. Claims 3, 9, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arndt (US 6,501,414) in view of Stump (US 5,904,210) or McEwan (US 6,492,933).

Regarding claims 3 and 9, the device taught by Arndt is clearly at least capable of being placed on a surface of a material. Arndt does not, however, teach a reflector means including a transponder, where the transponder is capable of being moved relative to the high-frequency measuring device. However, transponders of this sort are well known in the thickness measurement art. For example:

Stump teaches a method for detecting the depth of an underground boring tool using a radar probe and radar detection techniques in which the boring tool is provided with a device which generates a specific signal in response to a probe signal (ab. lines 1-6). Fig. 1 shows how probing and detection unit 28 transmits a probe signal 36 into the ground towards underground boring tool 24, and col. 4 lines 41-43 refer to a cooperative target 20 coupled to underground boring tool 24, which cooperative target is shown in Fig. 16. Col. 4 lines 47-59 teach that the cooperative target allows reflections from the underground boring tool to be readily distinguished from returns from other reflection sources. The cooperative target moves relative to probing and detection unit 28 as the boring tool to which it is coupled advances.

McEwan teaches a system for thickness measurement wherein an active reflector is used to provide accurate measurements even in cluttered environments (ab.

3-5). McEwan's active reflectors may be translated or rotated, as described at 12:25-32 with reference to Fig. 10A.

The reflector means taught by Stump and McEwan may be considered transponders, and each serves to provide distinct reflections in order to facilitate thickness measurement. It would have been obvious to further modify Arndt by providing such a transponder in order to provide distinct reflections to facilitate thickness measurement.

Regarding claim 10, Arndt teaches a position detection system for recording a path (60, Fig. 1, as per 10:62-66).

Regarding claim 11, the limitations of claim 11 do not differ from those of claims 3 and are rejected on the same grounds.

(10) Response to Argument

I. Claims 1, 2, 5-8, and 12 on appeal are properly rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,501,414 to Arndt.

Regarding Appellant's argument that Arndt does not teach determining a thickness of material, but rather teaches detecting concealed objects within a material, Examiner respectfully disagrees. Although Examiner agrees that Arndt teaches

detecting concealed objects, Examiner asserts that Arndt also teaches determining material thickness. See 9:14-21 (emphasis added):

> The present invention provides apparatus and methods for locating anomalies in microwave penetrable material, e.g., locating plastic mines or plastic (PVC) pipe in soil. Other concealed objects besides plastic mines can be located with the present invention. For example, an object encased in concrete may be detected. **Also, the thickness of a concrete floor can be determined** and, in some cases, the depth of a plastic pipeline and the diameter of the pipeline can be determined.

Presumably, when determining material thickness, concealed objects are not present in the material. In the case of measuring the thickness of a concrete floor, the interface between the concrete and the adjacent material, whatever it may be, would act as a reflector, rather than a concealed object.

Further, Examiner asserts that even in the case of detecting a concealed object, Arndt has effectively measured the thickness of the medium between the surface and the concealed object.

Regarding Appellant's argument that a determination of a thickness of the material from the measurement of the transmit time at two different locations is not disclosed by Arndt, Examiner respectfully disagrees. Arndt teaches performing measurements at a plurality of different locations at 10:1-42. For example, see 10:1-7 (emphasis added):

> Swept transmitter 32 steps or sweeps through all the frequencies **at each of a plurality of positions, such as position 34**. Antenna 15 may be physically moved as indicated by arrow 36 above surface 38 of microwave penetrable material or soil 16 and will sweep through each of the plurality of frequencies

> at each of a plurality of positions such as positions 34, 40, and 42, shown for example only.

Further, Arndt teaches the measurement of a plurality of transit times at each position at 10:43-53 (emphasis added):

> Swept receiver 44 receives a plurality of reflections due to the plurality of different frequency signals transmitted at each position. Swept receiver receives data from directional coupler 45 and provides this information to computer and software element 46. When received at block 48 and 50, the information including magnitude, phase, and **time delay for each reflection** may be measured and digitized at 48 and 50, stored for operation at 52, operated on by one of several preferred methods discussed subsequently at 54, and displayed or otherwise used or interpreted at 56 with or without a display.

The time delay measurements are sufficient to determine thickness of the material, given the known velocity of the measurement signal.

Regarding Appellant's argument that Arndt does not teach penetration of a material, from a first surface to a second surface and back again, Examiner respectfully disagrees. As noted above, in the case of measuring the thickness of a concrete floor, the interface between the concrete and the adjacent material, whatever it may be, would act as a reflector, rather than a concealed object, in which case it is clear that the material has been entirely penetrated. It would not be possible to measure the floor thickness otherwise.

Regarding the reflector means, Arndt teaches that the signal from the transmitter is reflected back to the receiver (9:35-38), which reflection implies a "reflector means".

In the case of measuring the thickness of concrete floor, the interface between the concrete and the adjacent material, whatever it may be, would act as a reflector means.

The failure of appellant to separately argue claims which appellant has grouped together constitutes a waiver of any argument that the Board must consider the patentability of any grouped claim separately. See In re McDaniel, 293 F.3d 1379, 1384, 63 USPQ2d 1462, 1465-66 (Fed. Cir. 2002).

Therefore, since appellant has not specifically provided arguments for claims 2 and 5-8, these claims will stand or fall with claim 1.

II. Claims 3, 9, 10, and 11 on appeal are properly rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,501,414 to Arndt in view of U.S. Patent No. 5,904,201 to Stump or U.S. Patent No. 6,492,933 to McEwan.

Regarding Appellant's argument that the measurement signal disclosed in the patent to Arndt never reaches the second surface of the material to be reflected, for example by a transponder, but instead is reflected from an object located inside a medium spaced from the second surface, Examiner respectfully disagrees. Arndt teaches that the thickness of a concrete floor may be measured (9:14-21), in which case it is clear that the measurement signal must reach and be reflected from the "second surface" of the floor, namely the interface between the concrete and the adjacent material, whatever it may be.

Regarding Appellant's argument that Stump and McEwan do not teach that new features of the invention as defined in claim 11, namely the transponder, Examiner respectfully disagrees. As set forth in the rejections above, Stump teaches a method for detecting the depth of an underground boring tool using a radar probe and radar detection techniques in which the boring tool is provided with a device which generates a specific signal in response to a probe signal (ab. lines 1-6). Fig. 1 shows how probing and detection unit 28 transmits a probe signal 36 into the ground towards underground boring tool 24, and col. 4 lines 41-43 refer to a cooperative target 20 coupled to underground boring tool 24, which cooperative target is shown in Fig. 16. Col. 4 lines 47-59 teach that the cooperative target allows reflections from the underground boring tool to be readily distinguished from returns from other reflection sources. The cooperative target moves relative to probing and detection unit 28 as the boring tool to which it is coupled advances.

McEwan teaches a system for thickness measurement wherein an active reflector is used to provide accurate measurements even in cluttered environments (ab. 3-5). McEwan's active reflectors may be translated or rotated, as described at 12:25-32 with reference to Fig. 10A.

The reflector means taught by Stump and McEwan may be considered transponders, and each serves to provide distinct reflections in order to facilitate thickness measurement. It would have been obvious to further modify Arndt by

providing such a transponder in order to provide distinct reflections to facilitate thickness measurement.

The failure of appellant to separately argue claims which appellant has grouped together constitutes a waiver of any argument that the Board must consider the patentability of any grouped claim separately. See In re McDaniel, 293 F.3d 1379, 1384, 63 USPQ2d 1462, 1465-66 (Fed. Cir. 2002).

Therefore, since appellant has not specifically provided arguments for claims 3, 9, and 10, these claims will stand or fall with claim 1.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/C. G./

Examiner, Art Unit 3662

/Thomas H. Tarcza/

Supervisory Patent Examiner, Art Unit 3662

Conferees:

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